Chapter 12

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Quality management of higher education for sustainable development: principles and assessment

Abstract

The use of a well-designed assessment tool, developed on the basis of quality management principles, helps to integrate a commitment to sustainable development in higher education in several ways. The assessment enables those responsible to find out what has been achieved, and to plan the next steps. Assessment can also be used as a means of rallying support and enthusiasm among the teaching staff and students involved in the implementation process. Finally, a systematic assessment makes it possible to integrate the quality of education for sustainable development with an institution's total quality management. This chapter discusses general characteristics of quality assessment models and fundamental decisions in the development of an assessment tool. One example of an assessment tool, AISHE, is described in more detail. The chapter concludes with a number of lessons learned from the use of this tool in practice.

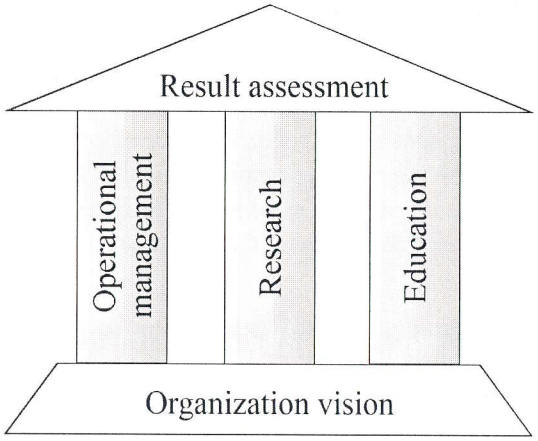
The role of institutions of higher education in relation to sustainable development

The goal of sustainability in higher education is the subject of numerous charters and policy statements, such as the Talloires Declaration (1990) and the Copernicus Charter (1993). In our view, a sustainable university is a university that effectively contributes to the sustainable development of society. According to Clugston and Calder (2000), the efforts of a university to contribute to sustainable development may manifest themselves in five ways (see figure 1):

- organisational philosophy,
- operational management,
- research,
- education,
- results assessment (i.e. the combined results of the four above aspects).

The first of these is fundamental. This is often not true in a chronological sense, as in many cases sustainability is given a place in research programmes, curricula or operational management before a debate actually takes place about the university's philosophy and policy on sustainability. But in order to integrate the university's commitment to sustainable development in a fundamental way (rather than in a more or less ad hoc manner), it is vital that – at some stage – the university should define and record its mission and philosophy in relation to sustainability.

Figure 1: **Five main aspects of sustainability in a university**



Many different stakeholder groups may be actively involved in this process: not only the university management, but also researchers, teaching staff, students, those working in the field and even society as a whole, as represented for example by NGOs, local communities and local and national governments. It is for this reason that a well-planned communication process is so important. This and other aspects of implementing sustainability in a university are shown in table 1.

Table 1: **Making universities sustainable**

Main element	*Aspects*
Organisational philosophy	Communication; formulation of philosophy; societal role; corporate identity; mission statement; from philosophy to policy.
Operational management	Environmental management; human resource management; health and safety; procurement; local community relations; etc.
Research	Selection of research fields and subjects; societal responsibility; environmental aspects; resource use and consequences; etc.
Education	Staff expertise; educational goals; educational methodology; interdisciplinary education; educational content; traineeships; student assessment.
Result assessment	Assessment tools; certification & benchmarking; evaluation & policy development; staff support; integration with quality management; stakeholder satisfaction; accreditation.

Because of the fundamental significance of the university's philosophy on sustainability, the five main elements may be related to each other as depicted in figure 1, in which philosophy is explicitly shown as underpinning the four other elements. Three other elements are shown as columns, corresponding with the three main roles fulfilled by a university in society:

- as a company (either profit-making or non-profit-making), i.e. as an employer, a procurer, a polluter, a member of a local community (Megerle and Megerle 2000), etc. This is an operational management role.
- as a research institute and a centre of expertise.
- as an educational institution.

Of these three roles, the educational role has the most bearing on a university's contribution to sustainable development. This is because educating students to actively contribute to sustainable development will have a snowball effect. If, for a number of years, a large number of students graduate from a university where they have come to regard sustainable development as important and where they have acquired the competences required to integrate this in their future work, the result will be a flood of 'sustainability

ambassadors' into trade and industry as a whole. In other words, if the university itself is managed in a sustainable way, this means simply that one organisation operates sustainably. If, however, the university educates its students for sustainable development, many other organisations will operate sustainably in due course. Of course, the different roles influence each other. The results of research and consultancy projects on sustainability topics will have a spin-off effect on teaching. Also, if its operational management is environmentally sound, the university will act as a role model for its students. In other words, all three societal roles will boost the snowball effect.

Ideally, the university will use its three roles to put its organisational philosophy on sustainability into effect. In order to check whether this is the case, the 'building' in figure 1 needs a 'roof', i.e. a system of results assessment to complete its quality management system. In principle, three different assessment systems can be used for a university's three different societal roles.

In terms of operational management, several systems exist. For instance, ISO can be used, either ISO 9000 for general quality management or ISO 14000 for environmental management. Alternatively, the EMAS system or the British Standard BS7750 may be used for environmental management. These methods are not designed specifically for use in higher education, which complicates the situation to a certain extent. Nevertheless, several universities have been awarded ISO 14000 (Fisher, 2003; Arvidsson, 2004) or EMAS certification (Delakowitz and Hoffman, 2000). A version of the EMAS system specially adapted to educational institutions has been developed and is in use in Finland and elsewhere (Envedu, 2004).

In relation to a university's second main role, i.e. as a research institute and a centre of expertise, there is no generally available method of assessing the university's contribution to sustainable development. Broadly speaking, university research is judged either by peer review, by funding institutions or by public debate. Although the contribution to sustainable development is undoubtedly an aspect of these judgments in certain cases, this is not yet based on a systematically evaluated and generally accepted method, thus enabling comparisons to be made within and between universities. This could be a subject for further study.

There are several ways of assessing a university's contribution to sustainable development through its educational role, and these are summarised in Shriberg (2004). Most of the assessment tools described by Shriberg focus on environmental management (in terms of campus ecology), but some target

teaching. One of these is the Sustainability Assessment Questionnaire (SAQ) developed by the Association of University Leaders for a Sustainable Future (ULSF), an NGO based in the USA (Calder et al., 1999). Another tool, developed in the Netherlands, is AISHE, the Auditing Instrument for Sustainability in Higher Educationexcellent

The key issue in this chapter is how to assess the extent to which a university or college contributes to sustainable development through its educational role. This is referred to here as the 'quality of higher education for sustainable development'. Quality assessment can bolster higher education for sustainable development in several ways. The assessment enables those responsible to find out what has been achieved and to plan the next steps. Thus, assessment can be used as a policy-making tool. Assessment can also be used as a means of rallying the support and enthusiasm of the teaching staff and students involved in the implementation process. Finally, a systematic assessment makes it possible to integrate the quality of education for sustainable development with an institution's total quality management.

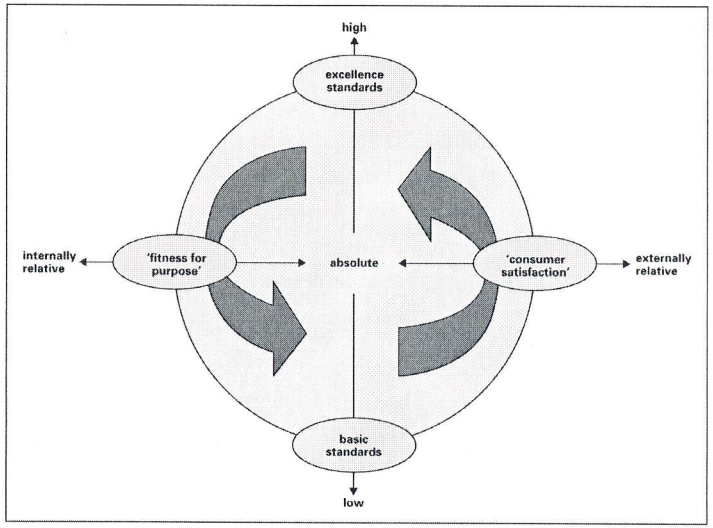
This chapter first reviews different definitions of quality and describes some general characteristics of quality assessment models. We then discuss a number of fundamental decisions that have to be made when developing a tool for assessing the quality of higher education for sustainable development. One example of an assessment tool is AISHE, designed by the Dutch National Foundation for Sustainable Higher Education (DHO), which we will describe in more detail. The chapter concludes with a number of lessons learned from using this tool in practice.

Defining quality

Under the influence of globalisation, there is a growing desire all over the world to compare and assess the quality of higher education. This movement is reflected by the joint development of quality assurance systems and the formation of international committees and international accreditation bodies. In Europe, the Bologna Declaration (1999) has been a driving force in internationalising quality assurance and assessment, since one of its objectives is to create 'a European dimension in quality assurance, with comparable criteria and methods'.

An important concept in systems for the management and assessment of quality is, of course, quality itself. Although more and more emphasis has been placed on quality in higher education in recent decades, there is no clear consensus about its meaning. In part, this is due to the fact that, often, no definition of 'quality' is actually given, and partly because a number of definitions are in use at the same time (Green, 1994). An analysis of the various definitions and approaches led Kwikkers et al. (2003) to distinguish two dimensions in which quality can be characterised (figure 2). The first dimension is the way in which quality is defined: is it intended to mean excellence (i.e. high standards, elitist and exclusive) or as complying with predefined basic standards? This is visualised as the vertical axis in figure 2. The second dimension, depicted as the horizontal axis in the same figure, is the relativeness of quality, which can be either absolute or relative, as measured by internal or external standards. This generates four major directions for the definition of quality. The arrows show that changes due to societal and political influences, for example, can affect the preference for or dominance of quality definitions. They also show that there is no superior definition of quality in this view.

Figure 2: **The two dimensions of quality definitions according to Kwikkers *et al.* (2003)**



Quality as excellence

This is a very popular interpretation among university staff and board members and is based on the assumption that only the 'highest' standards are worth striving to attain (upper part of figure 2). Quality is equated with difficulty and complexity, leading to the view that a course is good if only a small number of students pass it. In this definition of quality, the emphasis is on *input factors*, i.e. the quality of the staff, the contents of the curriculum, and the quality of the enrolling students.

Quality as 'fitness for purpose'

In the context of the process of democratisation and massification that has been taking place in higher education since the 1960s, a definition of quality has emerged which focuses on the fitness of an educational course for its purpose. Here, quality is measured not by an absolute ideal, but by internally defined objectives and the degree to which institutions effectively use tools to achieve these objectives. This approach is generally indicated as 'fitness for purpose' and has been the dominant approach in the development of external quality control and quality management systems. Its attraction in the constantly changing and diversifying sector of higher education is easy to understand, since it allows institutions to specify their own mission and objectives and choose indicators and tools for achieving these. This approach to quality therefore stresses the importance of (guaranteed) *processes* in a quality control system (shown in the left part of figure 2).

This definition has also met with resistance, however. First, its focus on internally defined standards implies that it is not affected by external stakeholders and trends. Second, there is a danger in defining quality only by reference to internal standards, since it may not meet certain minimum standards, such as those set by national inspection teams. Even if one defines a very clear internal purpose, there is no guarantee that an external body will accept the 'purpose' as defined. In other words, one could question whether the term 'fit for purpose' really is a good indication of quality in this context.

Quality as meeting basic standards

Criticism of the 'fitness for purpose' approach has led to two alternative approaches and definitions. The first focuses on the importance of basic standards that need to be met in any event. This approach ties in with the rise of accreditation systems in higher education and the desire of governments to regulate the degree programmes of higher education. In this approach to quality, a set of indicators are defined that are capable of demonstrating whether basic standards have been met (see lower part of figure 2). The emphasis is on *output*, and less on the process or input.

Quality as fulfilling consumer expectations

While the 'basic standards' approach again sets an absolute standard, the 'consumer satisfaction' approach is more concerned with the needs and expectations of stakeholders from outside the institute, i.e. citizens, consumers, businesses, NGOs, etc (see right part of figure 2). The popularity of this quality definition is closely related to the increasing interest in market forces in higher education, and to the growing power of consumers. Its merit lies in the legitimate and explicit formulation of societal expectations for education. Here too, the emphasis is on the *output* aspects of education.

The definition of quality used by a university tends to vary in time and will depend on the position adopted by a faculty or university under the influence of national and international policies and authorities. The specific definition used at a given point in time will combine aspects of the four directions mentioned above. The desire of academic institutions to foster sustainable development through higher education is a typical example of a response to societal needs and expectations.

Quality management systems for higher education

Universities in a number of countries are now obliged to develop and maintain a quality management system because of the accreditation system adopted by the national government in the wake of the Bologna Declaration. A sound system of quality management has several advantages. First, it can boost both the efficacy and the efficiency of a university's operating processes. Second, it can raise the satisfaction levels of all stakeholders, including staff and

students. Most importantly, perhaps, it offers a means of embedding the results achieved by the efforts of management and staff.

This is not only true in general. It applies equally to the application of the university's philosophy on sustainability to its operational management, research and education. There is one notorious example of a Dutch university in which a faculty received an award for its excellence performance with respect to sustainability. However, because of the absence of a sound system of quality management, the results were not anchored. After the dean of the faculty left and was replaced by someone who was less interested in sustainability, the curriculum was stripped of the majority of its sustainability components within one year of the award being made.

The components of a quality management system may include a description of desired results, procedures to be followed in order to produce these results, and an assessment method for measuring whether the objectives have been achieved. Other components may be a certification system and a benchmarking tool. The latter two have to be developed and maintained by an external and independent organisation, given the need to compare either universities or university departments with each other.

The description of the desired results can be formulated as a set of demands which have to be met in order for an independent audit body to issue a positive opinion. The ISO certification system is a good example of this. The ISO demands may be seen as a set of two-point scales: an organisation can either satisfy or fail to satisfy each of the demands. An alternative approach has been adopted by the European Foundation for Quality Management (EFQM), which has developed a system of quality management that is not based on an 'on-off' approach. Instead, it uses the concept of quality gradations, thus strengthening another important advantage of quality management, i.e. the principle of constant improvement (EFQM, 1991). This idea was refined by INK, a Dutch organisation for quality management, which introduced a five-point ordinal scale. This scale can be applied to a long list of criteria describing an organisation, implying that such an organisation may have reached one of five developmental stages in relation to each of these criteria. Each stage comes with a description of a possible state achieved by the organisation under review with respect to the criterion in question (INK, 2000).

The EFQM/INK model was designed originally for industry, but was adapted for higher education by a group of Dutch universities (Van Schaik

et al., 1998; HBO Expert Group, 1999). The model will be referred to in this chapter as the EFQM-HE model. A concise general description of the five stages, as applied to universities, is given in table 2. A graphic representation is given in figure 3.

Figure 3: **The five stages of an organisation in the EFQM-HE model**

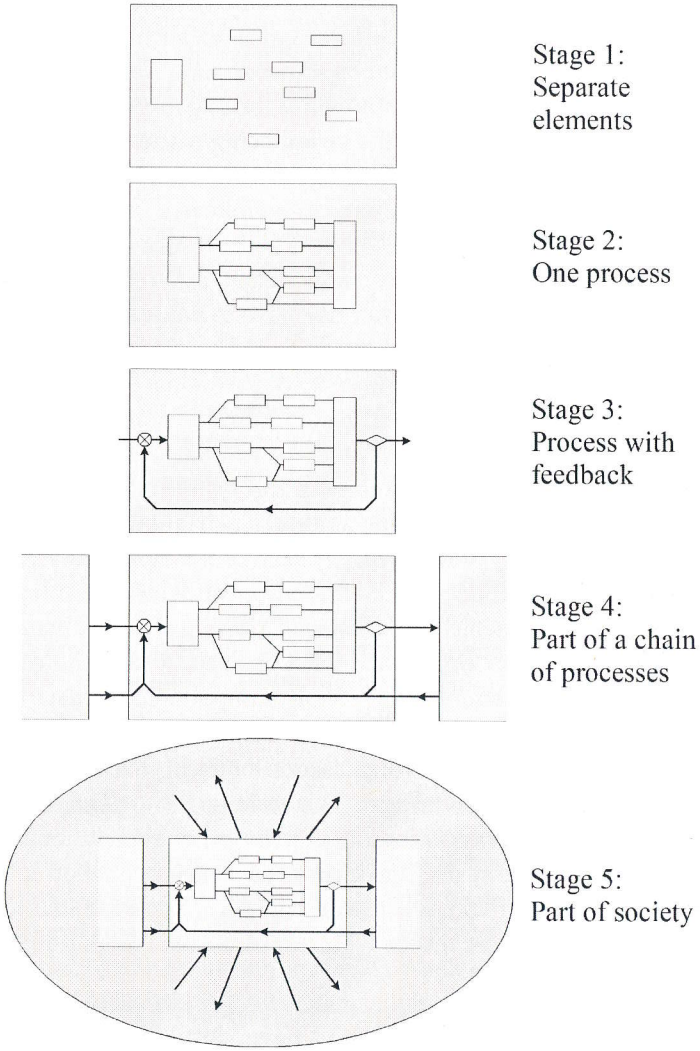


Table 2: **The five stages of the EFQM-HE model in relation to a university**

Stage 1: **Activity-**oriented	• Educational goals are subject-oriented. • Processes are based on action taken by individual members of staff. • Decisions are usually taken on an ad-hoc basis.
Stage 2: **Process-**oriented	• Educational goals relate to the educational process as a whole. • Decisions are taken by groups of professionals.
Stage 3: **System-**oriented	• Goals are student-oriented rather than teacher-oriented. • The organisation has formulated explicit medium-term and long-term goals. • Goals are clearly defined, measured and evaluated. The results of evaluations are used as input in order to define new goals.
Stage 4: **Chain-**oriented	• The educational process is regarded as part of a chain. • The organisation has a network of contacts with secondary schools and with practitioners of relevant occupations. • The curriculum is based on the qualifications of practitioners of relevant occupations.
Stage 5: **Society-**oriented	• The organisation has a long-term strategy. The organisation has a policy of constant improvement. • The organisation maintains contacts with direct customers and other stakeholders. • The organisation plays a prominent role in society.

The EFQM-HE model strengthens the process of constant improvement, since an assessment made with the aid of this model not only generates a description of the current situation at a university, but also enables a comparison to be made with further stages that should be within reach in the next few years. Hence, the model can be used as a basis for drafting a policy plan and for planning specific activities leading to improvements. This can be done in a systematic and cyclical manner, for example in the

form of Deming's Quality Circle (Deming, 1986). This circle consists of four steps, i.e. 'plan', 'do', 'check' and 'act', in which plans are made and measurable targets are set. Next, activities are performed, after which the results are evaluated ('checked') by means of a comparison with the targets set. Based on this evaluation, decisions are taken about the next cycle ('act') and the cycle starts anew.

All this applies not only to quality management in general, but also to the implementation of an organisation's philosophy on sustainability. A number of fundamental decisions will have to be taken when an assessment model for this is designed. More specifically, the following four questions will need to be answered:

- Should the assessment model be *content*-oriented or *process*-oriented?
- Should it be *quantitative* or *qualitative*?
- Should it be *prescriptive* or *descriptive*?
- Is it going to be used for the purpose of *internal evaluation* or *external auditing*?

Each of these questions will be discussed in the next section.

Questions to ask when designing a model for assessing a university's contribution to sustainable development

Is the model content-oriented or process-oriented?

A *content*-oriented assessment model consists of criteria relating to specific topics that should or should not form part of the university's curriculum from the viewpoint of sustainability. Criteria will also be included for operational management.

A *process*-oriented model requires information to be supplied on the way in which the curriculum has been designed, and on the way in which decisions are taken in relation to operational management. These criteria are defined at a higher level of abstraction. Examples of content-oriented and process-oriented criteria are given in table 3.

Table 3: **Examples of content-oriented and process-oriented criteria**

	Content-oriented	*Process-oriented*
Curriculum	The study of photovoltaic cells is part of the curriculum.	Explicit information is provided on decisions taken about sustainability-related topics in the curriculum.
Philosophy	The use of battery hens is not compatible with sustainable development.	The organisation has adopted standpoints on ethical issues that are encountered by practitioners of relevant occupations. These standpoints are regularly updated.
Staff training	Engineering teachers receive supplementary training in environmentally friendly product development.	There is a policy on and a budget for staff training in sustainability issues.

The advantage of content-oriented criteria is that they offer clarity about the product (i.e. the educational content) and the procedures (e.g. curriculum development and staff training). At the same time, this clarity is also a drawback, for the following reasons:

- The criteria are absolute: they leave no scope for the institute's or department's own responsibility.
- They are often not generally accepted: they mirror the designer's subjective opinion and hence entail a risk that other people may not agree with them. This may lead to an endless yes/no argument.
- They are time-related and static: there is a risk they may become obsolete as a result of new developments. For instance, if a technical invention made photovoltaic cells obsolete, the criterion would automatically become obsolete as well.

A potential disadvantage of process-oriented criteria is the risk of vagueness. This is not necessarily a serious drawback, however. For instance,

the above criterion relating to the adoption of a standpoint on ethical issues means that educational organisations where animal welfare is on the curriculum must adopt a standpoint on battery hens. The idea behind process-oriented criteria is that, if the operating processes in an organisation are well designed and properly used, the results (i.e. the course content) should also be good.

Should the model be quantitative or qualitative?

Criteria can be formulated either as quantitative measuring data or in a less precise, more descriptive, qualitative manner. The UK Higher Education 21 programme (HE21) contains a large amount of quantitative indicators. Some examples are given in table 4.

Table 4: **Examples of quantitative and qualitative criteria**

	Quantitative criteria (source: HE21)	*Qualitative criteria*
Curriculum	Percentage of students taking courses with a sustainability component.	A clear definition has been given of the relationship between the curriculum and the sustainability aspects of professional qualifications.
External effect	Number of sustainability-related conferences organised during the current year.	The organisation actively seeks to raise awareness and knowledge of sustainable development in society.
Environmental management	CO_2 emissions per FTE per annum.	The organisation publishes an annual environmental report.

Quantitative criteria can be used only if the quantities can be defined and measured with a certain degree of precision. This is a difficult point in all the above examples:

- The percentage of students, for example, can be measured only if it is possible to determine whether there is a sustainability component in each of the courses run by the university. This may not be particularly easy to decide, though. For instance, some people believe that nuclear energy is essential for a sustainable energy system, while others refute this view. Would a course on nuclear energy count, therefore?
- How does one decide whether a conference is sustainability-related? Is, say, a conference on waste processing sustainability-related?
- For which CO_2 emissions is the educational institute accountable, and for which is it not accountable? Exactly how will measurements be done to produce the necessary figures?

Like process-oriented criteria, qualitative criteria may have the disadvantage of being vague and of lacking in objectivity. For this reason, such criteria will instead be used on a collective rather than an individual basis. On the other hand, quantitative criteria may offer a false sense of objectivity and precision, as the above examples illustrate.

Another good example of this false sense of precision is the debate raging in certain quarters about the 'right' percentage of the curriculum that should be devoted to sustainable development (expressed as a percentage of the credit points). Some commentators say that this should be 5%, whilst others claim that the ideal figure should be either higher or lower. In fact, any percentage figure is basically misleading. In the first place, this is due to the false sense of precision: does a course in environmental law, for example, count as a sustainability- related part of the curriculum? And how about a course on nuclear energy such as the one referred to above?

Secondly, many courses have very little to do with sustainability when viewed on their own, but are highly relevant when viewed from a broader perspective. A good example is a course in a mechanical engineering programme dealing with connection technologies (i.e. gluing, screwing, welding, clamping, etc.). When viewed on their own, these techniques are not obviously sustainable. However, when a product consisting of several components needs to be designed, issues will be raised such as *design for disassembly* ('DFD') and *reuse and recycling*. These are highly relevant to sustainability, and a knowledge of connection technologies should improve the design of the product in question. A course of this nature would not count directly as part of the sustainability-related curriculum,

but would certainly do so indirectly. This example again illustrates the risk of placing too much trust in a set of quantitative criteria.

Should the model be prescriptive or descriptive?

Criteria may be formulated as compulsory rules, as is usual with many of the customary tools for quality and environmental management. Table 5 gives a number of examples in the left-hand column, based on ISO 14001, EMAS and BS7750. The alternative is a descriptive approach. This may take the form of an ascending series of descriptions, together constituting an ordinal scale. An organisation can compare itself with this scale and decide which developmental stage it has reached. A good example of this is the EFQM-HE model mentioned above. Table 5 gives a number of examples in the right-hand column (HBO Expert Group, 1999).

Table 5: **Examples of prescriptive and descriptive criteria**

	Prescriptive	*Descriptive*
Staff training	The organisation shall (...) require that all personnel whose work may create a significant impact upon the environment have received appropriate training. *(ISO 14001: 4.4.2)*	***Stage 1:*** Staff counselling, training and development are dependent on individual initiatives. *(EFQM-HE: 3.5)*
Policy	The company's environmental policy shall be adopted and periodically reviewed. *(EMAS: appendix 1, A.2)*	***Stage 3:*** The policy is evaluated on the basis of a systematic analysis (...). *(EFQM-HE: 2.4)*
Communication	The organisation shall establish and maintain procedures for receiving (...) communications (internal and external) from relevant interested parties. *(BS7750: 4.4.1)*	***Stage 4:*** Interested parties are actively involved in discussions about policy development and implementation. *(EFQM-HE: 2.3)*

The use of prescriptive criteria has several disadvantages. The main problem is that the prescription of criteria is *normative*. True enough, 'sustainable education' is fundamentally normative, because its goals and contents hinge on the personal views and ethical values of those responsible for the curriculum. Precisely because of this, it is impossible to construct a generally accepted measuring tool based on normative prescriptions. Besides, imposing external obligatory criteria would be contrary to one of the fundamental principles of sustainable development: the individual responsibility of people and organisations.

As a further point, only a few universities have been able to meet high standards. In Europe, for instance, only a small number of universities have been awarded ISO certificates. This is a serious drawback of normative directives: there is very little incentive to try and obey them if it is more or less impossible to do so. Moreover, they certainly do not foster constant improvement. The only alternative – lowering standards – is scarcely attractive as it means compromising in advance.

A final argument is that there is no obvious reason why an educational institution should seek to attain the highest standards of quality in all respects: the maximum is not necessarily the optimum. An institution may deliberately decide to aim for a lower standard in certain respects, for either internal or external reasons. For example, some people claim that the first stage is ideal for art studies, as a more advanced, and more highly organised stage would restrict the artistic freedom of teachers and students. Other reasons why universities may adopt relatively low stages may be financial or a matter of priorities: fostering sustainable development is usually not the only target in terms of quality improvement.

Is the model intended for internal evaluation or external auditing?

The question of whether an assessment model is used prescriptively or descriptively depends not only on its design, but also on its purpose. If it is to be used simply for the purpose of an internal evaluation, it will tend to be used descriptively, as there is no external authority or pressure. But if the assessment is to be used in making an external judgment, it may acquire the status of an external audit, for instance as part of an accreditation test. An assessment model may well be designed to meet both purposes. In

both cases, it is important that a tool for assessing a university's contribution to sustainable development can easily be treated as a part of or a supplement to the existing overall quality management system. Ideally, this means that the assessment tool should tie in both with existing tools for internal quality management and with accreditation systems, either those already in existence or those under development in various European countries.

In principle, an internal evaluation is more important from a sustainability perspective. Again, fostering sustainable development is a matter of accepting an organisation's individual responsibility, and this means that universities should first set their own standards, before looking beyond their boundaries. Also, practical experience shows that internal evaluations are generally more beneficial to the process of constant improvement than external controls.

A special type of external audit occurs when an institution is assessed in order to decide whether it merits the award of a 'Certificate of Sustainable Development in Higher Education'. These certificates were introduced by the Dutch National Foundation for Sustainability in Higher Education and have to date been awarded to around 50 faculties, mainly in the Netherlands, but also in foreign countries.

The concepts of quality used in the EFQM-HE model are the 'fitness-for-purpose' concept and the 'consumer satisfaction' concept. By adding a five-point ordinal scale related to developmental stages, a (relative) scale is introduced. The needs of society and the will to meet these have played an important role in the application of EFQM-HE to sustainable development.

AISHE, a Dutch assessment tool

In 2000 and 2001, the Dutch National Foundation for Sustainability in Higher Education developed a tool for assessing sustainability in higher education. Known as AISHE (which stands for 'Auditing Instrument for Sustainability in Higher Education'), the tool is geared towards the educational role played by universities, based on the arguments we have already set out in this chapter. An AISHE audit looks at 20 topics. AISHE consists of a list of 20 topics or criteria (see table 6). Following the EFQM-HE model, these topics are divided into three groups corresponding with three of the

four steps in the Deming circle, i.e. Plan, Do and Act. AISHE uses the same five-stage scales as the EFQM-HE model.

Table 6: **The 20 topics examined in an AISHE audit**

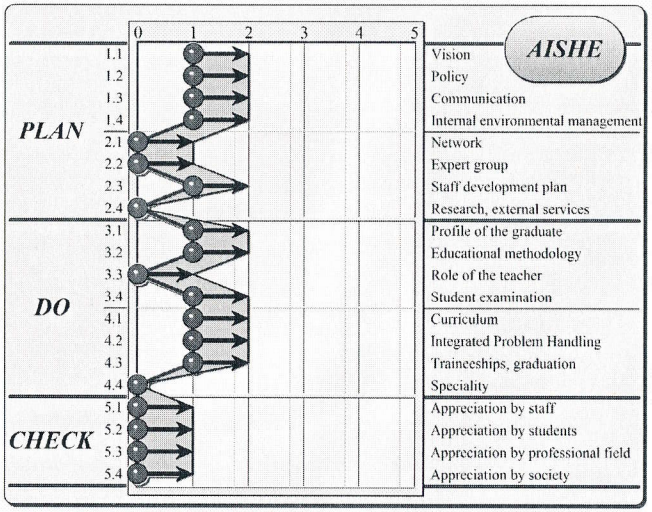
== Plan ==	**1. Philosophy and policy** 1.1. Philosophy on SD and education 1.2. Policy 1.3. Communication 1.4. Internal environmental management **2. Expertise** 2.1. Network 2.2. Expert group 2.3. Staff training plan 2.4. Research and external services
== Do ==	**3. Educational goals and methodology** 3.1. Graduate profile 3.2. Educational methodology 3.3. Role of the teacher 3.4. Student examination **4. Educational content** 4.1. Curriculum 4.2. Integrated problem-solving 4.3. Internships and graduation 4.4. Specialisation
== Check ==	**5. Result assessment** 5.1. Staff satisfaction 5.2. Student satisfaction 5.3. Employer satisfaction 5.4. Societal satisfaction

Alongside the EFQM-HE model, various declarations on higher education and sustainable development were used as sources for AISHE. Among these are the Talloires Declaration (1990), the Copernicus Charter (1994), and the Dutch Charter for Sustainable Higher Professional Education (DHO, 1999).

Regarding the fundamental choices mentioned above, AISHE makes use of process-oriented, qualitative and descriptive criteria. AISHE can be

used for both internal evaluations and external audits. Agreements have been made with the NVAO, the Dutch and Flemish Accreditation Organisation, about the way in which AISHE affects the accreditation of institutions of higher education. AISHE assessments are also used as a basis for awarding Certificates of Sustainable Development in Higher Education. In fact, these certificates are awarded at four different levels (known as stars, just like the well-known Michelin stars). The first two of these levels are shown in figure 4.

Figure 4: **The first two levels of the DHO Certificate of Sustainable Development in Higher Education**



After AISHE was developed, it was tested and validated. Feedback from a stakeholder forum was used, as well as the results of practical tests in the Netherlands and Sweden. Interviews were conducted with participants, and repeat assessments performed within one and the same department. All in all, the findings enabled the team of developers to conclude that the tool is valid in terms of:

- validity: validity of the underlying principle, representativity, concurrent validity;
- reliability: internal consistency, equivalence;
- applicability: unambiguousness, practicability, efficacy, acceptability.

The tool was published at the end of 2001, once this process had been completed (Roorda, 2001).

Roorda gives various detailed examples of the use of AISHE (Roorda, 2004). Here, we will briefly describe the general procedure. First, a group of about 15 participants is formed. The group has to be representative of the entire staff and student complement, which means that it needs to include one or more managers, a number of teachers (i.e. professors, lecturers, etc.) from a wide variety of disciplines and courses, a number of students, and perhaps one or more members of non-teaching staff such as a quality control officer and an environmental protection officer.

An AISHE assessment takes one day. The first step involves explaining the tool and the procedures. Next, the participants state their personal opinions on the 20 criteria, using the 20 x five-stage descriptions in the AISHE manual (this manual can be downloaded as a PDF file from www.dho.nl.). A meeting is then held at which all the participants are present and during which each of the 20 criteria is discussed until a consensus is reached on the present situation and on targets for improvement.

An AISHE assessment generates the following information:

- a description of the *present* situation, in the form of the stage attained in relation to each criterion;
- a similar description of the *desired* situation;
- a *date* by which the desired situation should have been attained;
- a list of initial priorities, i.e. objectives that must be achieved if the conclusion is to be drawn that the policy has been successful;
- support and enthusiasm about the plans among the management, staff and students.

Lessons learned

AISHE has been used by a number of universities, most of them Dutch, during the past few years. Whilst experiences vary, it is possible to draw some general conclusions. Users state that the AISHE audit and management system has the following advantages:

- the rapid insight afforded into a faculty's or institute's position in relation to the various indicators on the day of the audit;
- the consensus system. The fact that consensus on each item is required throughout the organisation enhances communication and reduces the risk of 'window dressing';
- the small amount of preparation needed (resulting in a low level of investment for staff and students), without any loss of validity;
- the integrated quality approach, leading naturally to a situation in which fostering sustainable development becomes part of a university's mainstream activities, rather than being an isolated activity;
- the possibility of comparing the results of assessments, thus enabling benchmarking to be performed.

The following are among the disadvantages mentioned by users:

- the fact that no written documents (i.e. policy papers) are used in the process may lead in some cases to uncertainties during the assessment;
- whilst appreciating the qualitative nature of the tool, some users would like to have some quantitative data as well;
- a number of users would like to assess their institute's operational management as well as the course contents. Other users, on the other hand, would like to use AISHE to assess their research activities;
- AISHE cannot be used for entire universities or relatively large faculties.
- The recent tendency to replace fixed education routes by individual education plans designed by students may cause a problem in the future: what exactly is going to be assessed?

AISHE is currently being reviewed and refinements, which may include criteria for assessing contributions to sustainable development in research and operational management, are under study. Extra modules containing a number of quantitative criteria that could be incorporated in an assessment on an optional basis may also be developed.

Other interesting experiences now that AISHE has been in use for four years are:

- Criterion 1.3, i.e. communication, is nearly always considered to be one of the most crucial areas in which improvements can be made. This criterion is usually selected as one of the highest priorities at the end of the assessment. In most – if not all – cases, plans are made to improve communication not just on the university's contribution to sustainable development, but within the university in general. This is an example of how a sustainability assessment can raise quality throughout a university.
- Many users initially regard internal environmental management (criterion 1.4) as falling beyond their responsibility and control. However, it is often concluded after some discussion that they are in fact in a position to improve their university's environmental management.
- Criterion 4.4, which relates to specialisation in sustainable development, has grown far more important since the system of majors and minors was introduced.
- In many cases, the 'check' part of the assessment shows that universities tend to neglect the evaluation of stakeholder appreciation in comparison with other aspects. The scores for criteria 5.1 (staff satisfaction) to 5.4 (societal satisfaction) are generally lower than the scores for the other criteria.
- In 30 or 40% of all assessments, the average scores awarded in the 'plan' section (i.e. criteria 1.1 to 2.4) are significantly higher than those in the 'do' section. The reverse is true in about as many other cases. There seems to be a strong correlation with the culture of the organisation under review. Some organisations tend first to lay a firm foundation of philosophy and expertise before working on their course content, while others prefer not to 'waste too much time talking' and seek to develop their courses first.
- Contrary to expectations, the Certificate of Sustainable Development in Higher Education has been a powerful stimulus for initiatives in sustainable development in education. Whilst the Certificate does not come with any financial award, and hence has a low objective

value, it lends itself as a target for policy plans. This is especially true of organisations that have been awarded their first-level Certificate, i.e. one star: they often see a second or third star as a desirable goal.

- The latter point may well be linked to the fact that one of the main benefits of an assessment is its ability to raise enthusiasm and support for sustainable development. In many cases, a group of participants consisting largely of fairly sceptical members of staff had been turned into a group of ambassadors for sustainable development by the end of the one-day assessment.

Conclusions

The use of a well-designed assessment tool, developed according to quality management standards, helps to integrate a commitment to sustainable development in higher education in several ways.

- It helps to mainstream the issue.
- It enables participants to find out what they have already achieved, which is something they may not actually have realised themselves.
- It sets an agenda for a debate culminating in a policy plan for fostering sustainable development, based on measurable targets accepted by a large number of people in the organisation.
- It creates vital support for the process.

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